FINAL

FORT HOOD ODC
COMPLIANCE STANDARD OPERATING PROCEDURE

PREPARED BY

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and

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LIST OF COMMONLY USED ACRONYMS & ABBREVIATIONS

AC&R	air condition and refrigeration
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ARI	Air Conditioning and Refrigeration Institute
°C	degrees Celsius
CAA	Clean Air Act
CAS No.	Chemical Abstract Number
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CU	Classification Unit
DoD	U.S. Department of Defense
DOT	U.S. Department of Transportation
DPW	Directorate of Public Works
DRMO	Defense Reutilization and Marketing Office
e^2M	Engineering Environmental Management, Inc.
ECO	Environmental Compliance Officer
ED	Environmental Division
EPA	U.S. Environmental Protection Agency
HCFC	hydrochloroflurocarbon
HFC	hydrofluorocarbons
Hg	mercury
HVAC	heating, ventilation, and air conditioning
lb	pound
MEC	mechanical
mm	millimeter
MOI	Memorandum of Instruction
MVAC	motor vehicle air conditioners
ODC	ozone-depleting chemical
ODP	ozone-depleting potential
OMB	Office of Management and Budget
oz	ounce
PFC	perfluorocarbon
psig	pounds per square inch gauge
SNAP	Significant New Alternatives Policy
SOP	standard operating procedure
UL	Underwriters Laboratories
USACE	United States Army Corp of Engineers

1.0 INTRODUCTION

In 2003 Fort Hood sponsored an effort to prepare an Ozone Depleting Chemical (ODC) Management Plan. The focus of that plan was how to handle the U.S. Environmental Protection Agency (EPA) mandated phase-out of ODCs. During the course of preparing the ODC Management Plan cursory observations were made regarding maintenance organizations and individuals responsible for handling ODCs and repairing ODC containing equipment. These organizations and technicians must follow EPA requirements to minimize releases of ODCs to the environment in order to protect the stratospheric ozone layer.

While developing the ODC Management Plan it became apparent deficiencies may exist or at least there are inconsistencies between the various organizations responsible for the maintenance of cooling equipment and the handling of ODCs. As a result GEOMET Technologies, LLC (A Versar Company) was retained as a subcontractor (subcontract no: e^2M-05-087) to Engineering Environmental Management, Inc. (e^2M) to do a ODC compliance audit and develop a standard operating procedure (SOP). e^2M received this contract from USACE Tulsa District, under the prime contract no: DSCA56-03-D-2005, order no: 0059.

This document outlines U.S. Environmental Protection Agency (EPA) requirements for the Protection of Stratospheric Ozone and Fort Hood's program and standard operating procedures to ensure regulatory compliance. For any organization that handles refrigerants, and in particular refrigerants that are classified as ODCs, it is essential that EPA regulations and requirements be integrated into the organization's existing work processes.

The document also provides some review on refrigerants, chlorofluorocarbons, and Federal rules and regulations to ensure all users have enough background to implement the compliance and operating procedures discussed, and to be aware of their importance and need. Also included are checklists that will assist Fort Hood personnel with internal compliance audits and EPA inspections.

Results of the Compliance Audit are summarized in a separate document titled *Fort Hood ODC Compliance Assessment Report.*

2.0 REFRIGERANT AND REGULATORY OVERVIEW

A refrigerant is the fluid used for heat transfer in a refrigeration system. The refrigerant absorbs heat during evaporation at low temperature and pressure, and releases heat during condensation at a higher temperature and pressure. Refrigerants can absorb heat by undergoing a change of state (for example from liquid to vapor), or they can absorb heat without undergoing a change of state (for example they may absorb heat as a liquid and remain a liquid, albeit a hotter one).

Fluorocarbon compounds have a demonstrated ability to effectively absorb/remove heat and thus they have commonly been used as refrigerants. It has also been determined that fluorocarbon compounds that contain chlorine are harmful to the stratospheric ozone layer and thus they are also known as ODCs. Based on their potential to deplete ozone ODCs have been classified as either a Class I or Class II ODC and are regulated by Title VI of the Clean Air Act (Sections 601 through 618). Section 608 (National Recycling and Emissions Reduction Program) and Section 609 (Servicing of Motor Vehicle Air Conditioning) are the parts that most directly address day-to-day refrigerant handling practices related to the service of air conditioning and refrigeration (AC&R) equipment.

Section 608 requires a reduction in ODC use and emissions to the lowest achievable level, and maximization of ODC recapture and recycling. Section 609 regulates the service of motor vehicle air conditioners (MVACs). Rules promulgated to meet Title VI mandates given in Sections 608 and 609 are published in 40 Code of Federal Regulations (CFR) Part 82.

In addition to the EPA rules that govern the use of ODCs, the United States follows the international mandate (known as the Montreal Protocol) to phase out the production of both Class I and Class II ODCs. For Class I ODCs the production phase out in the U.S. is already complete. The phase out of Class II ODCs will occur in stages up through 2030.

Class I ODCs include chlorinated solvents (carbon tetrachloride and methyl chloroform), compounds that contain fluorine, chlorine and carbon (CFCs), methyl bromide, and halons (compounds consisting of bromine, fluorine and carbon). Class II ODCs are compounds consisting of hydrogen, chlorine, fluorine, and carbon and are known as HCFCs. Both classes have been rated based on their ozone depletion potential (ODP). Class I ODCs have ODPs of 0.2 or higher. Class II substances have an ODP of less than 0.2. Within the Class I substances halons have the highest ODPs because they contain bromine. Bromine is many times more effective at destroying ozone than chlorine.

HCFCs are one class of chemicals that have been used to replace the Class I CFCs. Since they do contain some chlorine they do deplete stratospheric ozone, but to a much lesser extent than CFCs. Thus their phase out is on a much longer timeline then what was required for Class I ODCs. Another class of fluorocarbon compounds that do not contain chlorine, and thus don't destroy ozone (ODP is equal to zero), is hydrofluorocarbons (HFCs). This makes them a viable replacement for both CFC and HCFCs. Perfluorocarbon (PFC), a compound consisting of carbon and fluorine, also does not

deplete ozone but has the disadvantage of being a very significant contributor to global warming. ODCs and HFCs also contribute to global warming to varying extents. Also note, even though phase out requirements don't apply to HFC and PFC refrigerant/ODC substitutes, recent changes to EPA rules that regulate the use of ODCs have extended some the provisions to HFCs and PFCs.

The following table shows examples of more common ODCs, and ODC alternatives (refrigerant substitutes).

Common ODCs and ODC Alternatives

ASHRAE Number	Substance Type / Composition	ODP	CAS No.	Class
R-11	CFC	1.0	75-69-4	I
R-12	CFC	1.0	75-71-8	I
R-115	CFC	0.6	76-15-3	I
R-22	HCFC	0.055	75-45-6	II
R-123	HCFC	0.02 - 0.06	306-83-2	II
R-124	HCFC	0.02 - 0.04	2837-89-0	II
R-502	HCFC-22 & CFC-115	0.224	---	I CFC / HCFC Blend
R-134a	HFC	0	811-97-2	---
R-401a	HCFC-22, HFC-152a, & HCFC-124)	0.03	---	--- HFC / HCFC Blend
R-404a	HCF-134a, HCF-143a, & HCF-125	0	---	--- HFC Blend
R-410a	HCF-125 & HCF- 32	0	---	--- HFC Blend

A 2004 refrigerant survey for Fort Hood revealed that large quantities of Class II ODCs (approximately 77,000 lb) are used in the stationary AC&R equipment on Fort Hood. Also identified were comparatively small quantities of Class I ODCs and HFCs. Because of the large quantities of ODCs present it is critical that all personnel that repair refrigeration and air conditioning systems or otherwise handle refrigerants on Fort Hood are aware of and follow EPA refrigerant rules and procedures.

The regulations in 40 CFR Part 82 are covered in separate subparts. Based on the type of ODCs and refrigerants found on Fort Hood and the type of activities conducted the subparts most relevant to ODC and refrigerant related day-to-day handling on Fort Hood are the following.

- Subpart B - Servicing of Motor Vehicle Air Conditioners
- Subpart F - Recycling and Emission Reductions
- Subpart G - Significant New Alternatives Policy (SNAP) Program

3.0 PENALTIES FOR ODC/REFRIGERANT RULE NON-COMPLIANCE

The enforcement tools available to the EPA to deal with ODC/refrigerant rule violations include civil injunctions, civil penalties, imprisonment, and criminal fines. Failure to comply can result in fines up to $32,500 per day/per violation. Intentional violations can result in criminal penalties of up to five years imprisonment. Submitting false or misleading information or failure to submit required records also could incur criminal penalties, including prison terms of up to two years. To determine noncompliance the EPA conducts surprise inspections.

When assessing penalties the seriousness of the violation plays an important role. The seriousness of a specific violation is determined by examining the potential environmental harm, the risk of (or actual) refrigerant loss, the extent of deviation from the regulations, and the duration of the deviation. Also, factors not directly related to the violation can affect the penalty assessment. These include good faith efforts to comply; previous violation history, and payment of any previously assessed penalties for earlier violations.

In addition there are several factors the EPA may consider that may lead them to reduce or eliminate penalties. These include, but are not limited to, the following:

- The voluntary and complete disclosure by the violator of such violation in a timely fashion after discovery of the noncompliance;
- Full and prompt cooperation by the violator following disclosure of the violation including, when appropriate, entering into a legally enforceable commitment to undertake compliance and remedial actions;
- The existence and scope of a comprehensive environmental compliance program.

In terms of the potential of a violation to do serious harm the EPA generally views non-compliance in terms of the following schemes. Discussions of specific requirements referenced below are discussed in later portions of the document.

Major (substantial adverse affect)

- Knowingly venting a regulated substance.
- Not using recycling/recovery equipment.
- Not repairing leaks (for equipment 50 lb charge and over).
- Accepting signed statement pursuant to 40 CFR § 82.156(f) (2) if the person knew or had reason to know that such a signed statement is false.
- Failure to follow required practices in 40 CFR §82.156.

Moderate (significant adverse affect)

- Technicians not properly trained and certified.
- Recovery/Recycling equipment not properly maintained/does not pull specified vacuum.
- Not using equipment certified for the type of appliance.

- Altering design of certified refrigerant recycling or recovery equipment.
- Sale and distribution of refrigerants to persons who are not certified technicians.

Minor (minor adverse affect)

- Recordkeeping requirements not properly followed.
- Training certificate not available on request.
- Sale of unreclaimed refrigerant.
- Sale of refrigerant reclaimed by uncertified reclaimer.
- Failure of owner or reclaimer to certify.

Examples of several enforcement actions taken for ODC/refrigerant rule non-compliance are given below.

1. February 22, 2005: The EPA fines the University of California $118,404 for refrigerant leak repair violations identified in 2002.

2. January 22, 2004: Wal-Mart agrees to pay a $400,000 penalty for allegedly selling ozone-depleting refrigerants at their Sam's Club stores to customers who were not properly certified.

3. January 21, 2003: Three North Carolina air-conditioning repairmen plead guilty in U.S. District Court to violating the Clean Air Act by knowingly venting ozone-depleting HCFC refrigerant, R-22, into the atmosphere. The three employees of J & J Maintenance of Ft. Bragg, N.C. were responsible for maintaining the residential air conditioning units at Ft. Bragg. When sentenced, each defendant faces a maximum possible sentence of up to five years in prison and/or a fine of up to $250,000.

4.0 ODC AND REFRIGERANT REQUIREMENTS, AND COMPLIANCE PROCEDURES

This portion of the document addresses specific requirements found in 40 CFR Part 82, and the procedures Fort Hood personnel involved in the handling of ODCs and ODC alternatives (refrigerant substitutes) need to follow. Note, the requirements and procedures discussed do not cover all Part 82 requirements. Covered are the requirements that are most applicable to the types of refrigerant related handling activities conducted on Fort Hood. Discussed are the procedures that need to be followed when; purchasing/obtaining refrigerants, servicing of air conditioning and refrigerant (AC&R) containing equipment/appliances, disposal of AC&R equipment, recordkeeping and tracking, and for otherwise handling refrigerants in a equipment service/repair type environment.

All Fort Hood government AC&R service personnel including technicians/mechanics that service motor vehicles are required to follow the procedures outlined in the sections below. Contractors to Fort Hood who also use/handle refrigerants or refrigerant containing equipment on Fort Hood also have responsibilities under this document (see Responsibilities below).

4.1 Refrigerant Policy Overview

All personnel who handle refrigerants must be aware of and comply with the following:

1. Anyone faced with a situation that involves the use or handling of an ODC or refrigerant substitute that is not discussed in this document is still responsible for determining if EPA requirements apply. In such cases notify your Environmental Compliance Officer (ECO) or refrigerant coordinator (if applicable) and don't proceed until you have determined it is legal to do so after consulting at least one of the following resources.

    - Fort Hood Environmental Compliance Environmental Division (preferred action), Phone 254-553-1581
    - U.S. EPA Stratospheric Ozone Hotline, Phone: 1-800-296-1996
    - U.S. EPA Stratospheric Ozone Protection Web Page at http://www.epa.gov/spdpublc/desc.html
    - 40 CFR Part 82, Can be found on the Web at http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=%2Findex.tpl

2. Immediately report any and all violations of EPA rules to your supervisor or ECO and the Directorate of Public Works (DPW) Environmental Division (ED). Document all details of the violation or suspected violation and include your name, date, time, and description of observed or suspected violation. Be sure to indicate the type of equipment (make, model, serial number) and type of refrigerant involved if applicable.

Keep in mind the EPA will consider voluntary disclosure and cooperation when assessing penalties. In some cases the result can be greatly reduced fines or no fines at all (see Section 3.0).

3. All refrigerant leaks are to be repaired upon discovery. The ECO or refrigerant coordinator shall be notified of any substantial venting or inability to repair leaks immediately.

4. All refrigerant removed from Fort Hood AC&R equipment and not re-used in the same system will be recovered and turned into the Directorate of Public Works Classification Unit.

5. All maintenance personnel (contractor or government) shall complete an EPA approved training course before servicing CFC/HCFC refrigerant systems or MVACs, as required by 40 CFR Part 82, Subpart F or Subpart B respectively.

6. Only certified refrigeration technicians shall recover refrigerants from AC&R equipment. Service technicians shall only conduct servicing efforts in accordance with their level of certification.

7. If an accidental refrigerant release occurs such as human caused accidental damage to a refrigerant line, service valve or cylinder, the incident shall be documented. Documentation shall include the type and amount of refrigerant released, the cause of the release, equipment involved, and the release date. Appendix A provides an example of the form that should be used to document an accidental release.

8. Venting of 1) all Class I and Class II ozone-depleting chemicals (CFCs, and HCFCs), and 2) all substitute refrigerants consisting of a Class I or Class II ozone-depleting chemical (ODC) and a hydrofluorocarbon (HFC) and / or a perfluorocarbon (PFC) refrigerant is prohibited. Fort Hood by virtue of this document is setting policy in writing that shows it intends to comply with this prohibition.

9. No refrigerant will be recovered from AC&R and motor vehicle air conditioners (MVACs) or MVAV-like appliances without the use of properly certified EPA approved refrigerant recovery and recycling units.

10. All new employees will receive training before being allowed to handle ODCs. Update/refresher training will be provided annually to all ODC handlers.

4.2 Responsibilities

Refrigerant Coordinator/ECO

Each DPW shop and other organization that services AC&R equipment shall designate a refrigerant coordinator. For DPW shops the shop ECO should fill this role. The refrigerant coordinator/ECO shall be familiar with this document and will be responsible

for the following:

- Ensures all employees have received and reviewed copy of the Compliance Guide and Standard Operating Procedures (SOP).
- Identifies equipment and services required to comply with EPA regulations.
- Ensures all maintenance personnel (contractor or government) have completed an EPA approved training course before servicing CFC/HCFC AC&R equipment.
- Ensures that service technicians conduct recycling, recovery, and reuse operations correctly, in accordance with their level of training and pursuant to the manufacturer instructions for the recycling and recovery equipment.
- Maintains logs of refrigerant usage and disposal when applicable. These include DPW equipment leak service logs and maintenance report logs.
- Maintains an inventory of facility CFC/HCFC AC&R equipment and servicing records.
- Conducts compliance site audits and as necessary and if needed arranges for or conducts an annual refresher training session for in-house technicians to cover safety issues, alternative refrigerants, servicing procedures, federal, state and local regulations.
- Coordinates with the DPW Environmental Division (ED) regarding refrigerant compliance issues and requirements. This includes submittal of heating, ventilation, and air conditioning (HVAC) service/maintenance report logs for equipment containing more than 50 pounds of an ODC, and notification regarding leaking equipment that can't be repaired with 30-days, or has failed its initial or follow up verification test.

Refrigerant Service Technician

Each technician is responsible for becoming familiar and complying with EPA requirements and the Fort Hood Refrigerant Compliance Guide and SOP. The following lists technician responsibilities.

- Complete required service logs for AC&R repair jobs and equipment disposal projects.
- Maintain correct level of certifications for job requirements.
- Maintain, leak test, and document recovery unit maintenance per manufacturer's recommendations. Work with the ECO or refrigerant coordinator to facilitate any needed repairs or replacements.
- Follow procedures to eliminate refrigerant contamination and mixing.

Technicians should be able to answer possible EPA inspector questions such as:

- Can you recite the recovery vacuum levels for the refrigerants used in this location?
- Can you demonstrate the use of a recovery system?
- Can you validate that you leak check the recovery units?

- Can you demonstrate how to calculate a leak rate?
- What are the acceptable follow up leak check methods?

DPW Environmental Division (DPW ED)

- Oversee the implementation of the Fort Hood Ozone Depleting Chemical Management Plan.
- Oversee and implement policies that address compliance with 40 CFR Part 82.
- Submit the necessary documentation to the EPA for registering refrigerant recovery and recycling equipment.
- Track Refrigerant Usage for all AC&R equipment with more than 50 lb refrigerant charge.
- Calculate refrigerant leak rates for AC&R equipment that contains more than 50 lb of an ODC and maintain records of such.
- Notify shop ECOs/refrigerant coordinators of any AC&R equipment exceeds its' leak rate threshold.
- Coordinate with the EPA requests for extensions and or waivers for AC&R equipment that cannot be repaired or retrofitted/replaced within EPA timelines specified in 40 CFR Part 82.
- Maintain the refrigerant compliance database.
- Maintain a back-up copy of all service technician certification cards.

Contractors

Contractors shall be responsible and accountable for compliance with the EPA Clean Air Act (CAA) Section 608, 40 CFR Part 82 related work. Specific responsibilities are listed below.

- Contractor shall ensure that all contractor employees are made aware of the content of 40 CFR Part 82 prior to beginning work on AC&R equipment.
- Contractor shall provide only proper level EPA certified technicians using EPA certified and registered recovery/recycle units to perform work on Fort Hood AC&R equipment.
- Contractor shall maintain and submit on request: 1) documents with the information to confirm EPA Certification of all service technicians (Copies of EPA Certification Cards are acceptable), and 2) a list of recovery/recycling units to be used and a statement from contractor that recovery units are operating to EPA standards and that units are registered with the EPA.
- Contractor shall cover and hold harmless Fort Hood from all regulatory action as a result of their failure to perform service that meets all requirements of federal regulations.
- Contractor shall maintain and provide upon request all service order data for AC&R equipment including equipment ID number an/or serial number, equipment manufacturer and model number, location of equipment, refrigerant type, date of service, and service, repair or disposal description.

4.3 New AC&R Equipment and ODC Refrigerant Substitutes

1. With the exception of small hermetically sealed appliances, all AC&R equipment containing HCFCs (Class II ODC) that require replacement shall be replaced in accordance with the Fort Hood Ozone Depleting Chemical Management Plan. This plan is designed to eliminate Fort Hood's future dependence on Class II ODCs that will be phased out of production by 2020. When selecting new refrigeration equipment try to only install equipment that utilizes HFC/PFC refrigerants.

2. The use of new refrigerants (refrigerant substitutes) as alternatives to ozone depleting chemicals must have been tested in specific applications or equipment, and approved for use in that application or equipment by the EPA. The EPA has established a Significant New Alternatives Program (SNAP) in which they evaluate applications for use with substitute chemicals (refrigerants) that are not ODCs. Only approved alternatives found on the SNAP list shall be used for CFC or HCFC retrofit/conversion or replacement projects on Fort Hood. If the EPA places a substance on the SNAP unacceptable list it becomes unlawful to use it as a substitute for an ODC.

   A current copy of the SNAP list can be obtained from the EPA web site http://www.epa.gov/ozone/title6/snap

3. Any retrofit/conversion or replacement of CFC or HCFC equipment shall result in properly sized mechanical systems to satisfy mission requirements. Activities shall ensure load calculations are used to decide proper unit sizing, and all components of HVAC systems are properly sized and configured to meet user needs.

4.4 Technician Requirements

Who Must Be Certified

The EPA has established a technician certification program for persons ("technicians") who perform maintenance, service, repair, or disposal that could be reasonably expected to release refrigerants into the atmosphere. The definition of "technician" specifically includes and excludes certain activities as follows:

Included:

- Attaching and detaching hoses and gauges to and from the appliance to measure pressure within the appliance.
- Adding refrigerant to or removing refrigerant from the appliance.
- Any other activity that violates the integrity of the refrigerant circuit while there is refrigerant in the appliance.

Excluded:

- Activities that are not reasonably expected to violate the integrity of the refrigerant circuit, such as painting the appliance, re-wiring an external electrical

circuit, replacing insulation on a length of pipe, or tightening nuts and bolts on the appliance.
- Maintenance, service, repair, or disposal of appliances that have already been evacuated in accordance with EPA requirements, unless the maintenance consists of adding refrigerant to the appliance.
- Servicing motor vehicle air conditioners (MVACs), which are subject to the certification requirements of the MVAC refrigerant recycling rule.
- Disposing of MVACs, MVAC-like appliances, and small appliances.

Apprentices are exempt from certification requirements provided the apprentice is closely and continually supervised by a certified technician. In order for someone to be considered an apprentice they must be currently registered as an apprentice in service, maintenance, repair, or disposal of appliances with the U.S. Department of Labor's Bureau of Apprenticeship and Training (or a State Apprenticeship Council recognized by the Bureau of Apprenticeship and Training). If more than two years have elapsed since the person first registered as an apprentice the person will no longer be considered an apprentice.

Types of Certification

The EPA has developed four types of certification:

- Type I - Maintain, service, or repair small appliances with 5 pounds or less of refrigerant.

- Type II - Maintain, service, repair, or dispose of high- or very high-pressure appliances (an appliance using a refrigerant with a boiling point between – 50° and 10°C); typically comfort cooling appliances with greater than 50 pounds of refrigerant charge. Type II technicians can also maintain, service, or repair MVAC-like appliances.

- Type III - Maintain, service, repair, or dispose of low-pressure appliances (an appliance using a refrigerant with a boiling point above 10°C at atmospheric pressure); typically industrial cooling systems such as large building chillers.

- Type IV (Universal Technicians) - Maintain, service, repair, or dispose of low and high-pressure equipment must be certified as Universal Technicians.

  Note: Personnel that service MVAC appliances must receive a separate certification under the requirements in 40 CFR Part 82 Subpart B (see Section 4.13 MVAC and MVAC-Like Appliances).

Technicians are required to pass an EPA-approved test given by an EPA-approved certifying organization to become certified under the mandatory program. The Stratospheric Ozone Hotline distributes lists of approved testing organizations.

Certification Review Procedure

1. All Fort Hood service technicians must have received refrigerant handling certification from an approved program. If the technicians' card was issued from any of the institutions in the following list that technicians' card is not valid and must be re-certified.

2. It is the technicians' responsibility to make sure their card has a level indicated from the list above, has the following statement: "as required by 40 CFR, Part 82, Subpart F" and has not been issued form a non-approved program listed below. If these requirements are not met the technicians' refrigerant handling card is not valid, and the technician must get re-certified by an approved program. Service technicians may not work on AC&R equipment located on Fort Hood without the correct refrigerant handling classification.

Programs No Longer Approved by the EPA

- AcuPro Refrigerant Recovery, approved May 31, 1994 until June 11, 1996
- Alpha Mechanical Services, approved December 5,1995 until August 19, 1998
- County Trade School, approved April 28, 1994 until June 11, 1996
- Dundalk Community College, approved June 29, 1994 until June 11, 1996
- Education Dynamics Institute, approved August 17, 1994 until August 19, 1998
- I.M./Thrifty Distribution, Inc., approved January 26, 1994 until August 19, 1998
- 1998 Jenkins Professionals, Inc., approved October 20, 1994 until April 8, 1996
- Johnson Controls, approved January 26, 1994 until August 19, 1998
- Milwaukee County Transit System, approved August 17, 1994 thru Dec. 31, 96
- National Training Center, approved March 24, 1995 until June 11, 1996
- National Training Fund, approved February 23, 1994 until June 11, 1996
- Northeast Institute, approved January 26, 1994 until June 11, 1996
- Refrigerant Certification Services, approved March 30, 1994 until February 13, 1997
- Hartsog HVAC Training Institute, approved March 30, 1994 until May 31, 1999.

Programs Voluntarily Withdrawn

- State of Wisconsin, Dept. of Commerce, approved January 1995 until May 31, 1999
- Advanced Technical Training, approved June 29, 1994 through August 19, 1998
- Technical Seminars, approved December 28, 1993 through July 6, 1999
- Telemedia, Inc., approved December 10, 1997 through June 30, 1999
- Environmental Training Group, Inc., approved September 30, 1993 through June 30, 1999.

4.5 Refrigerant Recovery Equipment Requirements

Certification by Owners of Recycling and Recovery Equipment

EPA requires that persons servicing or disposing of air-conditioning and refrigeration equipment certify to the appropriate EPA Regional Office that they have acquired recovery or recycling equipment and that they are complying with the applicable requirements of this rule. This certification is to be made on OMB Form #2060-0256 and must be signed by the owner of the equipment or another responsible officer and sent to the appropriate EPA Regional Office.

1. The DPW ED shall ensure that an EPA Recovery Unit Acquisition Certification Form (OMB #2060-2056) has been submitted to the EPA regional office for each recovery unit used.

2. Shop ECO or designated refrigerant coordinator (if applicable) shall notify the DPW ED whenever a new refrigerant recovery unit has been obtained or if a shop enters into the service of MVACs. Shops that service MVACs have a separate certification program as described in Section 4.13.

Equipment Certification

The EPA has established a certification program for recovery and recycling equipment. Under the program, the EPA requires that equipment manufactured on or after November 15, 1993, be tested by an EPA-approved testing organization to ensure that it meets recovery efficiency standards. The standards (evacuation levels expressed in terms of inches of mercury) vary depending on the size and type of air-conditioning or refrigeration equipment being serviced.

The approved testing agencies are the Air Conditioning and Refrigeration Institute (ARI) and Underwriters Laboratories (UL). This list of approved equipment is available at: http://www.ari.org/directories/rrre/.

Approved equipment should have a label that is similar to the following:

"This equipment has been certified by ARI/UL to meet EPA's minimum requirements for recycling and/ or recovery equipment intended for use with [appropriate category of appliance--e.g., small appliances, HCFC appliances containing less than 200 pounds of refrigerant, all high-pressure appliances, etc.]."

Units manufactured before November 15, 1993 may be considered grandfathered and may not have the ARI or UL label if they meet the standards (evacuation levels) for units manufactured before November 15, 1993.

The EPA evacuation levels are given in Appendix B and in the following table.

EPA Evacuation Level Chart (inches of vacuum)*

Type of Appliance**	Recovery Units Manufactured Date	
	Before Nov. 15, 1993 ***Grandfathered Unit***	**After Nov. 15, 1993 ARI/UL Unit**
R-22, R-402A/B, R-407A/B/C appliance, or isolated component of such appliance, normally containing less than 200 pounds of refrigerant.	0	0*
R-22, R-402A/B, R-407A/B/C appliance, or isolated component of such appliance, normally containing 200 pounds or more of refrigerant.	4	10
Very High Pressure Appliance **R-410A/B, R-13, R-23, R-503**	0	0
Other high-pressure appliance, or isolated component of such appliance, normally containing less than 200 pounds of refrigerant. **R-12, R-114, R-134a, R-401A/B/C, R-500, R-502**	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing more than 200 pounds of refrigerant. **R-12, R-114, R-134a, R-401A/B/C, R-500, R-502)**	4	15
Low-Pressure Appliance **R-11, R-113, R-123**	25	25 mm Hg absolute

*: Inches of Hg vacuum relative to standard atmospheric pressure of 29.9 inches of Hg, except where noted.

**: Evacuation levels do not apply to small appliances, MVACs and MVAC-like appliances

For small appliances (less than 5 pounds), evacuation levels are as follows:

- For "grandfathered" recovery equipment, recover 80 percent.
- For new recovery equipment when the compressor is working, recover 90 percent.
- For new recovery equipment when the compressor is not working, recover 80 percent.
- For all small appliances, evacuate to four inches of mercury vacuum.

Recovery Equipment Maintenance

1. The care and maintenance of this equipment will be the responsibility of service technicians. If a unit does not function properly, the service technician shall notify their ECO/refrigerant coordinator and replace the non-functioning recovery unit with one that functions before proceeding with the service.

2. Technicians and contractors shall service and maintain recovery/recycling equipment per manufacturer's specifications. Leak testing of recovery units shall be performed every 6 months and the results documented and kept in the shop office. The following should be used when determining when to change filters/dryers.

- Change according to manufactures recommendations.
- Change after 200 lbs. of recovered refrigerant.
- Change after refrigerant is recovered from a compressor burn-out.
- Change when switching to a different refrigerant type.

Note: As described earlier, under 40 CFR § 82.162 (a) (5) Fort Hood must certify to the EPA that they will properly use recovery/recycling equipment. Proper maintenance of such equipment should be considered part of proper equipment use. Documentation of maintenance performed will provide one means to demonstrate to the EPA that equipment is being properly used. Also, under 40 CFR§ 82.161(f) the EPA may require technicians to demonstrate proper use of the recovery/recycling equipment. Failure to do so may result in revocation of the technician's certification.

3. Equipment can be sent to ManTech at Building 4623 for repair and/or manufacturer recommended servicing. Any organization that is permitted to generate Form 2407 maintenance requests can use this service. ManTech technicians will generate and maintain all necessary maintenance and repair records. Service technicians using ManTech services should request a copy of service records to be filed at their shop location. ManTech will perform leak tests on serviced equipment.

Recordkeeping

Each shop that utilizes or owns refrigerant recovery equipment shall maintain written inventory of such equipment that includes a record of its maintenance history. The form provided in Appendix C should be used for this purpose.

4.6 Refrigerant Recovery Practices

1. Verify refrigerant recovery equipment has been properly maintained (see Recovery Equipment Maintenance) in the past six months.

2. Follow the manufacturer's operating procedures for the equipment being used. Make sure that copies of the operating and maintenance procedures are attached to the equipment. Original operating instructions should be maintained in a file in the shop office.

3. Evacuate refrigerant to the levels indicated in the EPA Evacuation Level Chart and record levels achieved. All AC&R equipment must be evacuated to EPA-required vacuum level prior to opening. The EPA Evacuation Level Chart is provided above in the (Refrigerant Recovery Equipment Requirements Section).

EPA Exceptions

If, due to equipment leaks, the evacuation levels in the chart are not attainable or would substantially contaminate the refrigerant being recovered, persons opening the appliance must:

- isolate leaking from non-leaking components wherever possible;
- evacuate non-leaking components to the levels in the EPA Evacuation Level Chart; and
- evacuate leaking components to the lowest level that can be attained without substantially contaminating the refrigerant. This level cannot exceed 0 psig.

If evacuation of the equipment to the environment is not to be performed when repairs are complete, and if the repair is not major, then the appliance must:

- be evacuated to at least 0 psig before it is opened if it is a high- or very high-pressure appliance; or
- be pressurized to 0 psig before it is opened if it is a low-pressure appliance. Methods that require subsequent purging (e.g., nitrogen) cannot be used except with appliances containing R-113.

4. Recovered refrigerants shall not be mixed. A separate, clean, evacuated, labeled vessel/cylinder will be used for each refrigerant type recovered. Only approved containment vessels/cylinders shall be used.

5. Refrigerant recovered shall be weighed using a digital scale. When recovering large amounts of refrigerant, use a drum or hanging scale. Record the weight of the recovered refrigerant to satisfy recordkeeping requirements.

6. Refrigerant recovered can be returned to the same system. EPA rules also allow re-use in other systems owned by the same owner without restriction. However, if refrigerant changes ownership, that refrigerant must be reclaimed. All refrigerant that is recovered from Fort Hood equipment and is not returned into the AC&R equipment for re-use must be turned into the DPW Classification Unit (DPW CU).

4.7 Refrigerant Leaks*

For all AC&R equipment that has a refrigerant charge of more than 50 pounds, the following leak rates for a 12-month period are applicable:

- Commercial refrigeration……...35%
- Industrial process refrigeration…. 35%
- Comfort cooling…… 15%
- All other appliances…… 15%

*: Applies to ODCs, and HFC and PFC ODC alternatives that consist in part of an ODC.

1. If refrigerant is leaking at a rate that would exceed the applicable trigger rate then corrective action must be taken. If commercial or industrial refrigeration equipment is leaking at a rate that would cause it to release 35 percent or more of its charge over a year, it must be repaired within 30 days of leak discovery. The same 30-day repair requirement applies to comfort cooling equipment that is leaking at a rate that would cause it to release 15 percent of its charge over a year. **Thus, the trigger for repair requirements is the current leak rate rather than the total quantity of refrigerant lost.**

2. Additional leak repair time beyond the 30 days may be permitted if it has been determined that the leak repair cannot be made within 30 days. Fort Hood may apply for the extension to the 30-day repair requirement if they document all repair efforts undertaken to date and then notify the EPA of their inability to comply. In cases where an industrial process shutdown is required, a repair period of 120 days is substituted for the normal 30-day repair period.

3. If Fort Hood chooses to retrofit or retire appliances, a retrofit or retirement plan must be developed within 30 days of detecting a leak rate that exceeds the trigger rates. A copy of the plan must be kept on site. The original plan must be made available to EPA upon request. Activities under the plan must be completed within 12 months (from the date of the plan). If a request is made within 6 months from the expiration of the initial 30-day period, additional time beyond the 12-month period is available for owners of industrial process refrigeration equipment and federally-owned chillers (commercial and comfort).

<u>Leak Rate Determination and Notification Procedures</u>

1. If a service technician needs to add additional refrigerant to return a system to its' normal operating charge that equipment shall be treated as leaking. If the equipment normal operating charge is greater than 50 lb and the refrigerant used is an ODC, or an HFC or PFC substitute that consists of an ODC (blend), then a leak rate determination is required.

2. The DPW ED will conduct the leak rate determination, but it is the responsibility of the service technician to repair any leak as soon as it is discovered or as quickly as possible. **Do not wait for the DPW ED leak rate determination to begin repairs**. If it is a recurring leak the technician should stop adding refrigerant to the equipment until the leak is repaired. Make sure to follow proper EPA approved procedures for verification and record keeping when repairing the leak.

3. The type and amount of refrigerant added to equipment to bring it back to a full charge shall be entered into the shop's HVAC service/maintenance report log (described under Section 4.9 Recordkeeping Requirements) no later than the close of business on the day refrigerant was added.

4. Copies of the shops' HVAC service/maintenance report log shall be turned into the ECO no later than the close of business every Friday. The ECO will use this data to determine if refrigerant leak rates are being exceeded. It is very important to provide the refrigerant usage to the DPW ED on-time. This will allow for timely calculation of leak rates and the maximum amount of time to complete any required repairs.

5. Although the ECO will make the official leak rate determination, all service technicians should be familiar with the leak rate limits, and with how the leak rates are determined (see Leak Rate Calculations below).

6. The DPW ED will notify the shop ECO or refrigerant coordinator regarding equipment that exceeds their leak rate limits. If the identified equipment has not already been repaired, **it must now be repaired within 30 days from the date that the leak was discovered.** If the leak cannot be repaired within 30 days, the ECO or refrigerant coordinator must notify the DPW ED immediately and provide written documentation that explains why it can't be repaired. The DPW ED will then coordinate the proper follow-up action (request for extensions, etc) with the Regional EPA office.

Leak Rate Calculations

EPA has adopted two methods to determine leak rates. Fort Hood can use either method provided that once chosen it is the only method used. **It is not acceptable to switch between the two methods.**

Annualizing Method

1) Take the number of pounds of refrigerant added to return the system to a *full charge* and divide it by the number of pounds of refrigerant in the normal *full charge* for the system.

$$\frac{\text{\#lbs refrigerant added}}{\text{\#lbs refrigerant in normal } \textit{full charge}}$$

2) Take the number of days that have passed between charges (that is, how many days between the last time refrigerant was added and this time refrigerant was added) and divide by 365 (the number of days in a year).

$$\frac{\text{\#days since refrigerant last added}}{365 \text{ days}}$$

3) Take the number you determined in step 1 and divide it by the number you determined in step 2.

4) Multiply the number you determined in step 3 by 100 (to calculate a percentage).

The following equation illustrates this calculation:

$$\text{LEAK RATE \%} = \left[\frac{\text{pounds of refrigerant added}}{\text{pounds of } \textit{Full charge}}\right] \div \left[\frac{\text{\# days since refrigerant last added}}{\text{365 days}}\right] \text{x100}$$

Rolling Average Method

1) Take the sum (total) quantity of refrigerant added to the equipment in the *previous 365 days* (or since leaks in the equipment were last repaired, if that period is less than one year).

2) Take the number determined in step 1 and divide it by the number of pounds of refrigerant in the normal *full charge* for the system.

3) Multiply the number you determined in step 2 by 100 (to calculate a percentage).

The following equation illustrates this calculation:

$$\text{LEAK RATE \%} = \left[\frac{\text{pounds of refrigerant added over past 365 days (or since leaks were last repaired If that period is less than one year)}}{\text{Pounds of refrigerant in a full charge}}\right] \text{X} \quad 100$$

4.8 Leak Testing

For industrial process refrigeration equipment EPA requires an initial and follow-up verification test for any leak repairs completed in relation to a leak that exceeds the trigger rate for industrial equipment. Fort Hood at the current time does not appear to have any equipment that meets the definition industrial process equipment (definition given in the note below) thus the mandatory testing requirements don't apply at this time. **However, it is strongly recommended by EPA as best management practice to perform both the initial and follow-up verification test for all leak repairs performed regardless of equipment type.** Fort Hood technicians should follow this recommendation for all leak repairs on equipment with more than 50 lb of charge. The tests will ensure that leaks have been completely repaired and will provide a source of evidence to the EPA that Fort Hood complies with the requirements for leaking equipment.

Note: *Industrial process refrigeration* is defined as complex, customized systems used in the chemical, pharmaceutical, petrochemical, and manufacturing industries. These systems are directly linked to the industrial process. This sector also includes industrial ice machines, appliances used directly in the generation of electricity, and ice rinks. The amendments refer to "*appliances*" and

"equipment," but this guidance refers to "systems"- the term more commonly used in the industry.

If at least 50 percent of an *appliance*'s capacity is being used in an *industrial process refrigeration* application, the *appliance* is considered an *industrial process.*

Leak testing procedures to follow are given below.

1. Perform an **initial verification test** (for example, a soap bubble test) after performing one or more repairs to ensure that the repairs have been successfully completed. This test should be performed before adding refrigerant to the system. Do not bring the system back on-line until you verify the leak has been fixed.

2. Schedule and conduct **follow-up verification leak tests** for the repaired system. This test must be completed within 30 days after the initial leak verification test was completed or within 30 days of bringing the system back on line if it was shut down for the repairs. The follow-up verification test must be conducted with the unit operating at normal operating characteristics and conditions (normal load). The purpose of this test is to ensure that all repairs continue to hold under normal operation.

3. Document the results of both the initial verification test and the follow-up test (see Recordkeeping Section).

4. If the follow-up verification test is failed notify the DPW ED immediately. The DPW ED will notify the EPA of the failed test if industrial process refrigeration equipment was involved, and coordinate a proper response that may include equipment retirement or retrofit, or request for an extension to repair the system. If the failed test involved equipment other than industrial process equipment, follow-up action with the EPA may still be required as the failed follow-up verification test is an indicator that the original leak was not (or cannot) be repaired and thus proper follow-up actions, such as request for extension to the 30-day repair period need to taken.

Acceptable Leak Testing Methods

Initial and follow-up verification tests may use any method that meets sound professional judgment. Test examples include, but are not limited to:

- Electronic Leak detector
- Ultrasonic Leak detector
- Pressurizing system to 10 psig with HCFC-22 then increasing pressure to safe level with dry nitrogen.
- Soap bubbles
- Halide torch detector

- Deep Vacuum - Low-pressure chiller (pull to 1mm hg. Ok if rise is < 2.5 mm hg in 12 hours)
- Hydrostatic Tube test kit - Low pressure chiller water tubes

Safety notice: Never use oxygen, high-pressure air or a flammable gas for leak checking. Oxygen and oil form an extremely explosive mixture.

4.9 Recordkeeping Requirements

The U.S. EPA has established record-keeping requirements for owners and operators of air conditioning and refrigeration equipment containing ODCs (CFCs and HCFCs) or ODC alternatives (HFCs and PFCs) that in part consist of an ODC. Fort Hood requires that records be kept to comply with the laws, and to establish data for management of refrigerant assets.

Equipment over 50 Pounds
Fort Hood recordkeeping for equipment with over 50 pounds of refrigerant charge consists of three steps.

- Verification and update of the equipment inventory (inventory provided by the DPW ED).

- Generation of equipment leak service logs (prepared by shop service technician at time of equipment service/maintenance).

- Weekly update of shop HVAC service/maintenance report log and turn in to the DPW ED (updated by service technicians or ECO).

Shop Equipment Inventory

1. The DPW ED will maintain an inventory of all AC&R equipment that contains more than 50 pounds of a refrigerant that is either ODC or ODC alternative that consists in part of an ODC.

2. The DPW ED will provide each shop with a copy the inventory report for the AC&R equipment under their control. It will be the responsibility of each shop and their ECO or refrigerant coordinator to verify that the inventory is correct. The shop ECO will notify the DPW ED immediately with regard to any changes or updates (for example the addition of new equipment, retrofits, etc.) to the inventory.

3. The refrigerant equipment inventory input form given in Appendix D shall be completed and submitted to the DPW ED for each new AC&R equipment installation or for any equipment omitted from the DPW ED provided list.

4. The equipment inventory maintained by the DPW ED shall consist of the following information:

- Building number and location within the building (MEC room, roof top, etc.).
- Equipment manufacturer, model number, serial number, and ID if applicable.
- Refrigerant type and normal (full) operating charge.*
- Date that full charge amount was determined.
- Equipment duty type (comfort cooling, commercial refrigeration, industrial process refrigeration, other application).
- Applicable leak rate limit.

*: If the operating charge is unknown (split system, not listed on nameplate, etc.) then it must be calculated. Consult manufacturer data sheets, measure piping length, component capacity and detail calculations. An alternate method is to establish a charge by total circuit or system tonnage times a value of 1.5 pounds per ton.

5. The inventory report provided by the DPW ED shall be kept on file in the shop office along with equipment leak service logs (described below).

Equipment Leak Service Logs

1. For each piece of equipment identified in the shop equipment inventory (see above) the following information must be recorded by the service technician whenever service is performed to repair a leak, recover refrigerant, or add refrigerant.

   - Date of service and service technician name.
   - Description of service and repair performed.
   - Location of leak(s) if applicable.
   - Amount of refrigerant, recovered and new (makeup) refrigerant added. For recovered refrigerant also indicate if it was re-used or turned into the CU for reclamation or disposal.
   - Recovery unit ID or serial number and vacuum achieved (inches).
   - Initial leak verification test method and result (is the leak repaired (Yes/No)).
   - Follow-up test method, date and result (is the leak repaired (Yes/No)).

   A copy of the equipment leak service log is given in Appendix E.

2. Fort Hood service personnel shall use this log when servicing equipment charged with more than 50 lbs of refrigerant (Class I and Class II ODCs, and refrigerant substitute blends that consist in part of an ODC).

3. The equipment leak service logs need to be kept along with the equipment inventory in the shop office.

HVAC Service/Maintenance Report Log

1. Whenever new or additional refrigerant has been added to AC&R equipment (as recorded on the shop leak service log) the amount and type that was added must be recorded onto the HVAC service/maintenance report log given in Appendix F.

2. Copies of these logs are to be turned into the DPW ED by the close of business each Friday. These logs are used to calculate equipment leak rates and then must be turned in promptly. Also see the Refrigerant Leaks section for procedures related to leaking equipment.

Certifications

1. Copies of technician certifications will be kept on file at the DPW ED office. Technicians however shall carry their certification card with them at all times.

2. The shop ECO or refrigerant coordinator must promptly provide copies of certifications for new personnel to the ED office.

3. The DPW ED will maintain copies of EPA Recovery Unit Acquisition Certification Form (OMB #2060-2056) certifying that Fort Hood has purchased and uses certified recovery equipment.

Disposal

When AC&R equipment is removed refrigerant and oil must be removed. Records that describe the disposal process must be maintained and used oil should be turned into the DPW CU. See AC&R Equipment Disposal Section for a summary of the recordkeeping requirements.

ODC Management Binder

All required shop records related to ODC handling shall be kept (in a binder labeled ODC/Refrigerant Management Book) by the ECO for each shop.

4.10 AC&R Equipment Disposal

Under 40 CFR Part 82 the EPA has established rules for AC&R equipment that will be permanently retired, dismantled or otherwise disposed of. Requirements exist for small appliances (hermetically sealed units that contains < 5 pounds refrigerant) and AC&R equipment that contain over 5-pounds of refrigerant.

Charge > 5 Pounds

1. For any AC&R equipment that is to be dismantled, demolished or disposed of the refrigerant shall be recovered in accordance with the EPA's evacuation requirements

as specified in the EPA Evacuation Level Charge (40 CFR Part 82.156, Table 1) and shown under Refrigerant Recovery Equipment Requirements in this document.

2. No equipment with more than 5 pounds of charge will be disposed of until the refrigerant has been recovered.

3. Service technicians recovering refrigerant shall prepare a refrigerant removal statement for the equipment after all refrigerant has been removed. This statement shall be signed by the servicing technician and shall be presented to the owner or operator of the landfill or salvage operation where final disposal will occur. Without this signed statement the landfill or salvage operation may refuse the equipment.

   Appendix G provides the refrigerant removal statement that should be used.

Charge < 5 Pounds

For small appliances EPA rules allow you to either 1) send the units to an EPA approved scrap/recycling/salvage company that has refrigerant removal capability, or 2) recover refrigerant on-site by capturing 90% of the refrigerant in the appliance when the compressor in the appliance is operating, or capture 80% of the refrigerant in the appliance when the compressor in the appliance is not operating; or evacuate the small appliance to four inches of mercury vacuum.

1. If Fort Hood technicians remove the refrigerant from the small appliance they need to provide documentation of such to the final person in the waste stream (i.e. scrape metal recycler, landfill owner). The documentation should clearly state that the refrigerant has been recovered and that all other appropriate materials (including oils) have been properly removed.

2. If the charge is to be left intact, the final person in the disposal change (i.e. scrap metal recycler or landfill owner) is responsible for ensuring that the refrigerant is removed before final disposal. In such cases only a salvage yard/recycler or landfill that has certified to the EPA that recover refrigerant prior to disposal shall be used.

Recordkeeping

The following records must be maintained for equipment being demolished or disposed.

- Refrigerant type and amount recovered, and oil amount removed.
- Date of recovery and technician name.
- Model number, serial number and ID number (if applicable) of the equipment that container the refrigerant and oil.
- Recovery unit used (model, serial number) and vacuum level achieved.
- Equipment disposal method (dumpster, scrap, etc).
- For small appliances (<5 lb of refrigerant) that have been sent to an EPA approved scrap/salvage company record the salvager's name and point of contact,

the date of the transaction, unit model and serial numbers, and refrigerant type for all units sent.

- Keep invoices, receipts and any other document that records the transfer of ODCs and contaminated lubricants to disposal locations.

The form given in Appendix H should be used when disposing of refrigerant containing AC&R equipment.

Disposal Notes

- After the refrigerant has been recovered, properly remove the oil, filters, capacitors and any mercury switches.
- Refrigerant removed must be stored in approved, labeled containers and turned into the DPW CU.
- If refrigerants are recycled or reclaimed, they are not considered hazardous waste. In addition, used oils contaminated with CFCs are not hazardous waste if:

  - The oils are not mixed with other waste;
  - The oils are subjected to CFC recycling or reclamation; and
  - The oils are not mixed with used oils from other sources.

4.11 Refrigerant Supply and Turn-In

1. The DPW Classification Unit (CU) shall serve as the source of all issues of refrigerant.

   The Fort Hood DPW ED has issued a Memorandum of Instruction (MOI) for the ODC facility operations at the DPW CU. That MOI is being incorporated by reference into this document and shall be followed unless otherwise specified. A copy of that memorandum has been included as Appendix I.

2. All recovered refrigerant that are not re-used will be turned into the DPW CU.

3. If there is a need to purchase refrigerant from a commercial retailer contact the Fort Hood DPW ED at 254-287-9718 prior to purchasing refrigerant.

4. A service order is required for all issues. All technicians working with ODCs or ODC alternatives (refrigerant substitutes) must be registered with (have a copy of their certification card on file at) the DPW ED Office before they can begin work.

5. Refrigerant will only be issued to technicians that have valid technician certification as per 40 CFR Subpart F or 40 CFR Subpart B. Note, technicians certified under 40 CFR Subpart B for service of MVACs shall not be issued small cans (containers with less than 20 pounds of refrigerant) of EPA-approved MVAC substitutes containing an ozone-depleting substance.

6. The DPW CU will maintain a record of all refrigerants issued. This record will include the name and department/shop of the recipient, the date of issue, and the type and quantity of refrigerant issue.

7. Service vehicles will be limited to one full cylinder and one recovery cylinder. Shop locations will be limited to 7-day supply.

4.12 Handling Refrigerant Cylinders

1. Fill only containers that are currently D.O.T approved for fluorocarbon refrigerants. Make certain that the pressure rating of the cylinder is adequate for the refrigerant type being filled.

2. Each refrigerant cylinder shall be labeled and marked in accordance with the ARI Guidelines K and N, and EPA ant D.O.T regulations.

3. When recovering refrigerant use only cylinders designed and marked for refrigerant recovery service. Do not re-use cylinders intended for virgin refrigerant service. The DPW CU will place a red band around recovery cylinders used to issue virgin/reclaimed refrigerant. (Use only DOT CFR Title 49 or UL approved storage containers for recycled refrigerant) Always make certain the cylinder is charged only with the refrigerant for which it is designated and labeled. **Do not mix different refrigerants in the same cylinder.**

   If refrigerants are mixed they shall be considered unusable and treated as hazardous waste.

4. Inspect cylinder to be used for signs of damage, such as dents, gouges, and corrosion. Also check the valve for damage. Do not fill damaged cylinders.

5. Verify that recovery cylinders have a current hydrostatic test date. Do not fill if the present date is more than 5 years past the test date that is stamped on the shoulder of the cylinder.

6. Refrigerant cylinders should not be filled in excess of 80% of the fluid capacity. More than 80% would be considered overfilling and may result in serious safety issues.

7. To prevent cylinder overturning while be transported and to comply with 49 CFR transportation requirements all refrigerant cylinders shall be lashed in an upright position; loaded into racks securely attached to the motor vehicle; or packed in boxes or crates of such dimensions as to prevent their overturning. Also, never transport a gas cylinder without its valve protection cap firmly in place.

Disposable Cylinders

- All disposable cylinders shall be returned to the DPW CU for proper disposal.
- Disposable cylinders should never be re-used.
- Prior to final disposal by the DPW CU the cylinders will be punctured after being completely emptied by drawing a vacuum.

4.13 MVAC and MVAC-like Appliances

40 CFR Part 82 Subpart B describes the requirements for motor vehicle air conditioners (MVACs) and MVAV like-appliances*. Any person on Fort Hood that services motor vehicle conditioners shall comply with the following.

*: Some air conditioners are identical to motor vehicle air conditioners (MVACs), but they are not covered by the MVAC refrigerant recycling rule (40 CFR Part 82, Subpart B) because they are used in vehicles that are not defined as "motor vehicles." These air conditioners include many systems used in construction equipment, and aircraft. The EPA is defining these air conditioners as "MVAC-like appliances" and is applying the MVAC rule's requirements for the certification and use of recycling and recovery equipment to them.

Technician Certification

An EPA-accredited training program must certify all personnel who service MVAC appliances. The training program must address the standards related to the recommended service procedures for the containment of refrigerant, extraction equipment, extraction and recycle equipment, and the standard of purity for refrigerant in motor vehicle air conditioners. Among other items that must be addressed are the anticipated future technological developments, such as the introduction of ODC alternatives in new motor vehicle air conditioners.

Universal or Type I, II, or III technicians (certified under 40 CFR Subpart F for the service of stationary AC&R equipment) cannot service MVAC appliances unless they have completed the proper (approved) training and certification program for MVAC appliances. However, technicians who maintain, service, or repair MVAC-like appliances can do so if they have been properly certified as a Type II or universal technician under 40 CFR Subpart F.

The EPA maintains a list of approved technician certification programs. A current list can be obtained by calling the EPA hotline at 800-296-1996 or from the EPA website at http://www.epa.gov/spdpublc/title6/609/technicians/609certs.html.

Recovery/Recycling Equipment

Only refrigerant recovery and recycling equipment the EPA approved and certified by Underwriters Laboratory (UL) and ETL Testing Laboratories, Inc shall be used during the performance of repairs or service to MVAC refrigerant systems. Approved equipment that can be used falls into two categories, 1) equipment that can both recover and recycle refrigerant (recover/recycle) and 2) equipment that can recover refrigerant but not recycle it (recover-only).

Equipment is approved based on the type of refrigerant it is used for as follows.

- R-12, recovery -only
- R-12, recover/recycle

- R-134a, recover-only
- R-134a, recover/recycle
- R-12 & R134a, recover/recycle
- Other refrigerants other than R-12 & R134a, recover only

The equipment must be capable of ensuring removal of refrigerant from the system being serviced by reducing the system pressure to a minimum of 102 mm (4 in) of mercury below atmospheric pressure (*i.e.*, to a vacuum).

The complete standards set for recycling/recovery equipment are set forth in Appendices A through F of 40 CFR Part 82 Subpart B. The list of approved certified equipment can be found at
http://www.epa.gov/ozone/title6/609/technicians/appequip.html
Some air conditioners are identical to motor vehicle air conditioners (MVACs), but they are not covered by the MVAC refrigerant recycling rule (40 CFR Part 82, Subpart B) because they are used in vehicles that are not defined as "motor vehicles." These air conditioners include many systems used in construction equipment, and aircraft. The EPA is defining these air conditioners as "MVAC-like appliances" and is applying the MVAC rule's requirements for the certification and use of recycling and recovery equipment to them.

Equipment Certification Statement to the EPA

Shops that service MVACs must certify to the EPA that they have acquired and are properly using approved refrigerant recovery equipment and that each individual authorized to use the equipment is properly trained and certified. **This certification is a one-time requirement**. If a shop purchased a piece of CFC-12 or HFC-134a recycling equipment in the past, and submitted the certification to the EPA, the shop does not need to send a second certification to the EPA when it purchases a second piece of equipment.* This is the case regardless of the type of refrigerant the equipment is designed to handle. The certification form for MVAC shops is shown in Appendix J.

*: Regardless of past equipment certification to the EPA the DPW ED must be notified of all new purchases of recovery/recycling equipment.

Practices and Recordkeeping

Any Fort Hood personnel that service MVAC appliances shall follow the following practices.

1. Do not use refrigerant blends or other refrigerant substitutes that have been disapproved by the EPA (Consult SNAP List).

2. Recover all refrigerants used in MVAC systems prior to beginning work on the system.

3. Follow EPA guidance when retrofitting MVAC appliances from R-12 to R-134a. This guidance can be found at http://www.epa.gov/ozone/title6/609/technicians/retrguid.html.

4. Technicians are prohibited from changing fittings on the same recovery or recycling unit back and forth so that the same unit is recovering or recycling different types of refrigerant.

5. Equipment that is converted for use with a new refrigerant must be able to meet the applicable equipment standards set forth in the regulations.

6. Handle R-12 that has been mixed with other refrigerants as a hazardous waste.

7. Properly manage compressor oil recovered from MVAC systems.

8. Maintain name and address of any facility to which refrigerant is sent. All recovered refrigerants shall be sent to the CU.

9. The Fort Hood DPW ED will maintain copies of certifications for all personnel that service MVACs.

4.14 Internal Audit Checklist and EPA Inspection Checklist

When an inspector comes to your facility, there are certain things he will check to see if you are in compliance. It is good practice to perform a "self-audit" and catch and correct problems before they result in penalties. The EPA to determine noncompliance conducts surprise inspections. Failure to comply can result in fines up to $32,500 per day per violation. Submission of false or misleading information may result in criminal penalties, including imprisonment.

An internal compliance audit should be conducted once every year for each department or shop that handles refrigerants and AC&R equipment. Any deficiencies need to be recorded, addressed and re-checked within 30 days. Any deficiency that has created a condition of EPA rule non-compliance needs to be reported to the environmental compliance office if it can't be rectified within 30 days or if it is major in nature.

Self-Audit Check-Lists

The following checklists should be used as the basis for the self-audit. (Note that the self-audit checklists provided do not cover all possible compliance issues and topics. They address the most common topics and significant issues against which the EPA makes compliance determinations).

GENERAL RECORD KEEPING TOPICS	Yes	No	N/A	Comments
Are equipment leak service logs being maintained for equipment > 50 lb charge & are they complete with the following information?				
Are records being maintained for 3 years?				
The amount of refrigerant added during the maintenance or repair of all refrigerant equipment?				
The amount of refrigerant recovered or recycled during the maintenance, repair, or disposal for all refrigerant equipment?				
Description of service or repairs performed and details of where leaks were and what was done to repair?				
Which recovery/recycle unit was used to recover or recycle refrigerant during maintenance, repair, or disposal?				
What vacuum level was achieved during refrigerant recovery for a major service or equipment disposal?				
When leaks exceed annual leak rates is there documentation that proves they were repaired within 30 days?				
Are initial leak verification tests being documented after leak repairs? Is method used documented?				
Are follow-up leak verification tests being conducted & documented, within 30 days of initial test, for units (circuits) which contain refrigerant of 50 pounds or greater? *Note: perform for all ≥ 50 pound units*.				
Have retrofit /replacement plans been written for equipment not repaired with 30 days?				

SERVICE TECHNICIAN TOPICS	Yes	No	N/A	Comments
Are all technicians EPA certified to proper level?				
Are copies of EPA certification cards on file?				
Are any technicians EPA cards from programs decertified by the EPA?				
Do all EPA certification cards have a legal listed and the words "*as required by 40 CFR, Part 82, Subpart F"?*				
Are technicians documenting accidental refrigerant release incidents? *(Non mechanical)*				
Can technicians quote the EPA >50 lbs. equipment types and their leak trigger rates?				
Are charging scales accurate; calibrated?				
Are technicians reaching the required vacuum levels for correct recovery and documenting information?				
Can technicians demonstrate proper use of recovery units and can they quote the EPA required recovery vacuum levels?				
Is each technician accurately documenting each leak and service on the Fort Hood Equipment Leak Service Log?				
Is the Shop HVAC service/maintenance report log being updated and submitted weekly to the Fort Hood DPW ED?				
Is all recovered refrigerant turned into the CU?				

SERVICE TECHNICIAN TOPICS	Yes	No	N/A	Comments
Have personnel servicing MVAC and MVAC like appliances been properly trained and certified by an approved MVAC certification program?				

RECOVERY UNIT TOPICS	Yes	No	N/A	Comments
Is a list of model numbers, serial numbers and date purchased for all recovery units available?				
Is a copy of the recovery unit acquisition certification form, sent to the EPA, showing at least one recovery unit is on site, available?				
Have periodic leak/vacuum checks of recovery units been conducted and documented?				
Is there evident recovery unit filters are being changed as required?				
Are manufacture instructions on file and are service technicians following manufacturer procedures to operate the recovery unit?				
Are automotive (MVAC) Section 609 recovery units being used for Section 608 stationary equipment?				
Is documentation on annual service for recovery units on the service truck or in the shop office?				
Are only approved MVAC recovery units being used in the service of MVACs?				

REFRIGERANT MANAGEMENT TOPICS	Yes	No	N/A	Comments
Is the Fort Hood ODC Management Plan being utilized?				
Is the Fort Hood Refrigerant Compliance Guide and SOP being utilized?				
Are Environmental Safety Notices being placed on all AC&R equipment that have had refrigerant removed prior to equipment disposal?				
Is each technician accurately documenting each leak found and repaired?				
Are leak rate calculations being performed and results documented?				
Do you have an inventory for all AC&R equipment that contains more than 50 pounds of a Class I or Class II refrigerant?				
For each piece of equipment in the inventory above, can you identify whether it is commercial refrigeration equipment, industrial process equipment or comfort cooling or other type of equipment?				
For each piece of equipment in the >50 lb inventory, can state the amount of full charge, the type of refrigerant used, and when the full charge was determined.				
For each piece of equipment in the >50 lb inventory, can you state the amount of full charge, the type of refrigerant used, and when the full charge was determined.				
For each piece of equipment in the >50 lb inventory, can you provide a description of its location, along with its serial number or other identifier?				

REFRIGERANT MANAGEMENT TOPICS	Yes	No	N/A	Comments
If there are any retrofit or retirement plans for leaking AC&R equipment can you provide a dated copy of each plan developed?				

REFRIGERANT CYLINDERS	Yes	No	N/A	Comments
Are DOT 39 (disposable) cylinders being evacuated to 4 psig and punctured before disposal?				
Do you have an accurate inventory of all recovery and virgin refrigerant cylinders?				
Are recovery cylinders correctly color-coded to ARI-K (gray with yellow top)?				
Are all recovery cylinders current with the 5-year re-testing date?				
Are all cylinders properly labeled with a refrigerant specific tag/label and non-flammable gas tag/label attached?				
Are you using dedicated cylinders for each refrigerant type?				

GENERAL SAFETY ISSUES AND CONTRACTORS	Yes	No	N/A	Comments
Do technicians have access to refrigerant MSDS on their trucks?				
Do technicians have access to appropriate Personal Protective Equipment for the type of work they do?				
Can you state which AC&R equipment that contains a Class I or Class II refrigerant is contracted out for service?				
Can you provide the name, address, and telephone number for all contractors that are used to service AC&R equipment of Fort Hood?				
For each contractor identified in the item above can you confirm that that they follow are required work practices and comply with all certification procedures for equipment and personnel?				
For each piece of equipment serviced by a contractor that contains more than 50 pounds of a Class I or Class II refrigerant can you obtain and provide copies of all logs that document services performed?				

EPA Inspections

EPA Inspections may be unannounced or scheduled. If Fort Hood adheres to the self audit policy above and corrects deficiencies when identified, all shops should be well prepared for unannounced inspections. If an inspection is scheduled or anticipated, try to determine beforehand the purpose, scope and specific objectives of the inspection. One area that has been a common source of EPA rule violations are the leak rate provisions. The EPA is fully aware of the compliance problems related to these requirements and has continued to pursue significant enforcement actions on a wide variety of companies. During an inspection the EPA will conduct staff interviews, a facility tour and a records review.

After the inspections, inspectors may conduct a closing meeting to review their findings. Make note of the findings, and if possible, offer to make on-the-spot corrections. Try to settle all questions with the inspectors at this time. If there's a disagreement with a finding, challenge the finding, not the inspector or the regulation.

Confirm any deadlines set by the inspector for correcting deficiencies. Expect a follow-up visit if there were any deficiencies to be corrected.

Example of Actual EPA Inspection Data Requests

The list below is a sample of the compliance related data that the EPA sought during an inspection of a federal facility.

1. State whether or not the facility has engaged in the servicing, maintenance, repair and/or disposal of any appliance containing a refrigerant.

2. Provide the name, address, and phone number of any contractor contracted by the facility to service, maintain, repair and/or dispose of any appliance containing a refrigerant.

3. Identify each contractor that maintains at least one technician at the facility full time to maintain, service, or repair appliances that contain and use a Class I, Class II, or substitute substance as a refrigerant.

4. Provide the names of all technicians employed by the facility who maintain, service, or repair appliances that contain and use a Class I, Class II, or substitute substance as a refrigerant.

5. Provide the name of each technician employed by the facility that is certified by an EPA approved technician certification program in accordance with 40 CFR § 82.161(a)

6. Provide the date of certification for each technician referenced in number 5 above, the level of certification, and a copy of each technician’s certificate.

7. State whether or not the facility owns equipment to recover or recycle the refrigerants during the service, maintenance, repair and/or disposal of such appliances.

8. If the facility owns equipment to recover or recycle refrigerants, provide a copy of any invoice or other record documenting the purchase of such equipment, as well as the type of equipment, the manufacturer's name, the equipment model number, year manufactured, and any serial number.

9. Provide a copy of the facility's equipment certification to the EPA that the facility has acquired, and is properly using, approved refrigerant recovery or recycling equipment.

10. State the total number of appliances located at the facility that contain and use Class I, Class II, or substitute refrigerant in amounts greater than 50 pounds.

11. For each appliance referenced in number 10 above, provide a description of its location at the facility, along with its name, serial number, or other method of identification utilized by the facility or contractor.

12. For each appliance referenced in number 10 and 11 above, identify whether it is a commercial refrigeration appliance, industrial process refrigeration appliance, comfort cooler, or other type refrigeration appliance in accordance with the definitions found in 40 CFR § 82.152.

13. For each appliance referenced in number 10 and 11 above, state the amount of the full charge of refrigerant, the type of refrigerant used, and the date full charge was determined.

14. For each individual appliance referenced in number 10 and 11 above, provide copies of any and all work logs, service tickets, invoices and any other documents maintained by the facility or contractor relating to the following:
    a. Date any and all service was performed;
    b. Date each leak was discovered;
    c. Complete detailed description of all repair work done (if repairs were not conducted, state the reasons);
    d. Date each repair was conducted;
    e. Amount of refrigerant added at the completion of each repair; and
    f. Name of the technician who performed the work.

15. For each individual industrial process refrigeration equipment/appliance where repairs were conducted, state whether an **initial verification test** was conducted, provide the date of said test, and the specific procedures employed to conduct the test. Provide documentation maintained by the facility or contractor of said test.

16. For each individual industrial process refrigeration equipment/appliance where repairs were conducted, state whether a **follow up verification test** was conducted, provide the date of said test, and the specific procedures employed to conduct the test. Provide documentation maintained by the facility or contractor of said test.

17. For each appliance referenced in number 10 and 11 above, provide records that estimate the annual leak rate.

18. State if the facility or contractor has developed or is aware of any retrofit or retirement plan for leaking equipment. If so, provide a dated copy of each plan.

19. State whether the facility or contractor is aware of any mothballed appliance during the above referenced time frame and the reasons therefore.

APPENDIX A

ACCIDENTAL OR UNINTENTIONAL VENTING REPORT

Use for accidental (unintentional) releases such as human caused accidental damage to a refrigerant line, service valve or cylinder.

Note: Do **not** record leaks related to mechanical failures of equipment on this form.

Accidental or Unintentional Venting Report

Date_____

Location_____

Refrigeration Unit_____

Type of Refrigerant Vented_____ Approx. How Many Pounds Were Vented_____

Description of Venting Incident _____

_____

What was the Cause of the Release?_____

_____

What Precautions Have Been Taken to Prevent This from Happening Again?

_____

Technician Name/Rank or Grade_____ Certification Number_____

ECO Signature_____ Date_____

ECO Printed Name and Rank _____

APPENDIX B

EPA EVACUATION LEVEL CHART

EPA Evacuation Level Chart (inches of vacuum)*

Type of Appliance**	Recovery Units Manufactured Date	
	Before Nov. 15, 1993 ***Grandfathered Unit***	**After Nov. 15, 1993 ARI/UL Unit**
R-22, R-402A/B, R-407A/B/C appliance, or isolated component of such appliance, normally containing less than 200 pounds of refrigerant.	0	0*
R-22, R-402A/B, R-407A/B/C appliance, or isolated component of such appliance, normally containing 200 pounds or more of refrigerant.	4	10
Very High Pressure Appliance **R-410A/B, R-13, R-23, R-503**	0	0
Other high-pressure appliance, or isolated component of such appliance, normally containing less than 200 pounds of refrigerant. **R-12, R-114, R-134a, R-401A/B/C, R-500, R-502**	4	10
Other high-pressure appliance, or isolated component of such appliance, normally containing more than 200 pounds of refrigerant. **R-12, R-114, R-134a, R-401A/B/C, R-500, R-502)**	4	15
Low-Pressure Appliance **R-11, R-113, R-123**	25	25 mm Hg absolute

*: Inches of Hg vacuum relative to standard atmospheric pressure of 29.9 inches of Hg, except where noted.

**: Evacuation levels do not apply to small appliances, MVACs and MVAC-like appliances

APPENDIX C

RECOVERY/RECYCLING UNIT FORM

Complete for each refrigerant recovery and recycling unit

Recovery/Recycling Unit Form

Shop : _____ Unit ID: _____ Manufacturer: _____

Model: _____ Serial Number: _____ Date Purchased: _____

Unit Type: ☐ Active ☐ Passive ☐ Other

Vacuum Level : _____ ☐ Inches ☐ Microns

Type of Filter: _____

Equipment Assigned to: ☐ Shop ☐Technician ☐ Service Vehicle

☐ Other Description _____

Maintenance History:

Leak Test			Filter Change		
Test Date	**Results/ Comments**	**Performed by**	**Change Date**	**Comments**	**Serviced by**

General Maintenance		
Maintenance Date	**Details of Maintenance**	**Serviced by**

APPENDIX D

AC&R EQUIPMENT INVENTORY INPUT FORM

Complete for each piece of new equipment or equipment that is missing from current inventory

AC&R Equipment Inventory Input Form

Building: _____ **Refrigerant Type: _____**

Equipment ID:_____ **Refrigerant Charge:_____Lbs_____Oz**

Location: _____ **Method to Determine Charge:_____**

Service Department/Area Shop:_____ **Date Full Charge Determined:_____**

Multiple circuits? If yes, please provide charge of each circuit. (1)_____(2)_____(3)_____ (4)_____

Equipment Type : _____

Manufacturer:_____

Model No. :_____

Serial No.:_____

Date Installed:_____

Capacity: _____ ☐ BTUH ☐ Tons

Duty Type: ☐ Comfort Cooling ☐ Industrial Process

☐ Commercial ☐ Other

Leak Rate Limit: _____

Additional Notes:

APPENDIX E

EQUIPMENT LEAK SERVICE LOG

Complete for each service of AC&R equipment with more than 50 lb of refrigerant

Equipment Leak Service Log

Bldg. No._____ Equip. Serial No./ID: _____ Equip. Model No.: _____

Refrigerant Type:_____ Normal Full Charge (lbs)_____

Date of Service*:_____ Servicing Technician: _____.

Complete the Following For Each Service or Leak Repair:

Location of the leak on equipment	
Amount (lbs) of refrigerant recovered*	
Amount (lbs) of refrigerant added to return full charge *	
Net Leakage (lbs)*	
Describe repair	
Was the recovered refrigerant reused	
If not reused – where was it sent for reclamation or disposal	
Recovery Unit ID /Serial Number	
Vacuum achieved	
Initial Leak Verification* *(conduct at the conclusion of **major** repair service)*	
Method used for verification	
Leak repaired	Yes/ No
If no, action taken	
Follow-up Leak Verification*	
Date of follow up test	
Method used for verification	
Leak repaired	Yes/No

***:** Enter into HVAC service/maintenance report log for submission to the DPW ED

****:** Mandatory for industrial process equipment, Best Management Practice for all other equipment > 50 lb

Comments

APPENDIX F

HVAC SERVICE/MAINTENANCE REPORT LOG

Complete each week and submit to the DPW ED
(Enter data from Equipment Leak Service Log)

HVAC Service/Maintenance Report Log

Building Number_____ Appliance/Unit Serial Number_____ Total Installed Charge_____

Maximum Allowable Annual Leakage Rate[1]_____

Date	Service / Maintenance Action	Technician	Refrigerant Added (lbs)	Refrigerant Removed (lbs)	Loss Due To[2] Accidental Venting (lbs)	Net Leakage[3] (lbs)	Annualized Leakage Rate[4] (%)	Leak Repaired (Yes/No/NA)	Comments

Notes:

1. Maximum Annual Leakage = 35% (Refrigeration) or 15% (Air Conditioning).
2. Each time an accidental or unintentional release occurs, the technician must document the release of an accidental/unintentional release form (Attachment (2)) or SOP Appendix A.
3. Net Leakage (lb) Since Last Charging = Refrigerant Added (lb) Since Last Charging – Refrigerant Removed (lb) Since Last Charging – Loss Due to Accidental or Unintentional Venting (lb) Since Last Charging.
4. Annualized Leaking Rate = (Net Leakage / Installed Charge) x (365 / Number of Days Since Refrigerant Last Added) x 100

Maintain for Record Purposes for 5 Years

APPENDIX G

REFRIGERANT REMOVAL STATEMENT

Completed form must accompany equipment turned over to salvage company or landfill for disposal

REFRIGERANT REMOVAL STATEMENT

(Prescribing Authority: DoD 4160.21M)

IN COMPLIANCE WITH THE REQUIREMENTS OF THE CLEAN AIR ACT AMMENDMNEDS 0F 1990, SECTION 608, ICERTIFY THAT THE REFRIGERANT HAS BEEN RECOVERED FROM THIS ITEM IN ACCORDANCE WITH THE U.S. EPA REGULATION AT 40 CFR 82.156 (f), (g), and (h).

NAME

(Required by regulation) (Certified Technician recovering the refrigerant)

ADDRESS

(Required by regulation) (Service Organization or Company)

CITY	STATE	ZIP CODE
(Required by regulation)		

DATE REFRIGERANT REMOVED

(Required by regulation)

SIGNATURE OF TECHNICIAN

(Required by regulation)

GENERATOR/DRMO

(Add information to match the certificate to the equipment to demonstrate compliance during regulatory inspections)

ITEM DESCRIPTION OR NOUN NAME/SERIAL NO.

TURN-IN DOCUMENT NO. (DTID)

APPENDIX H

EQUIPMENT DISPOSAL FORM

Complete for piece of AC&R (>5 lb refrigerant charge) equipment being disposed

Equipment Disposal Form

Date of recovery/disposal	
Technicians Name	
Department	
Equipment ID or serial #	
Refrigerant Type	
Lbs. of Refrigerant removed	
Recovery Equipment ID	
Vacuum level achieved	
Was refrigerant reclaimed?	Yes/ No
If yes what department or company?	
Is equipment being scrapped	Yes /No
Organization receiving equipment	

I hereby affirm that the equipment identified above has been disposed of in accordance with Section 608 of the Clean Air Act.

Technicians Signature _____

APPENDIX I

MEMORANDUM OF INSTRUCTION FOR THE ODC FACILITY AT THE DPW CU

DEPARTMENT OF THE ARMY
HEADQUARTERS, U.S. ARMY GARRISON
BUILDING 1001 ROOM W321
FORT HOOD, TEXAS 76544-5000

REPLY TO
ATTENTION OF

IMSW-HOD-PWE

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Memorandum of Instruction (MOI) for Ozone Depleting Chemical Facility Operations at Directorate of Public Works (DPW) Classification Unit (CU)

1. REFERENCES:

a. AR 200-1, Environmental Protection and Enhancement

b. FH Regulation 200-1, Environment and Natural Resources

c. Texas Administrative Codes, 30 TAC 323, 338, 230-355, and 451

d. Code of Federal Regulations, Title 40 Part 82

e. Fort Hood's Title V Site Operating Permit # O-01659 and Compliance Plan

f. Fort Hood's Ozone Depleting Chemical Inventory and Management Plan

2. DEFINITIONS:

a. Ozone Depleting Chemicals (ODCs):

(1) Class I ODCs: Class I ODCs are not authorized for use or purchase on Fort Hood. There are drop-in substitutes that can be found in the EPA's Significant New Alternative Policy (SNAP) List found at the EPA website U.S. EPA: SNAP Refrigerants.

(2) Class I ODCs consist of:

(a) Halons (ODCs containing bromine): Primarily Halon 1211 and 1301 have been used in hand-held fire extinguishers and fire suppression systems.

THIS DOCUMENT IS UNCONTROLLED WHEN PRINTED

POC is the DPW Environmental Air Program Manager, 287-8714.

(b) CFCs (compounds consisting of chlorine, fluorine and carbon): Primarily R-11, R-12, R-500, R-502, and R-113 have been used in equipment such as chiller plants, large fixed air-conditioning systems, climate-controlled test facilities and walk-in refrigerators and freezers.

(c) Chlorinated Solvents (Carbon Tetrachloride, Methyl Chloroform).

(3) Class II ODCs: HCFC (compounds consisting of hydrogen, chlorine, fluorine and carbon) such as R-22 have been typically used in small fixed air-conditioning systems.

b. Replacement refrigerants (compounds that do not contain bromine or chlorine) such as HFC-134a are alternatives under the EPA Significant New Alternatives Policy (SNAP) for both retrofit and new uses (see the EPA website U.S. EPA: SNAP Refrigerants).

3. APPLICABILITY: This MOI applies to all Fort Hood units, Reserves, National Guard and other units while assigned or training at Fort Hood, directorates, activities, and contractors.

4. PROCEDURES:

a. General:

(1) The Fort Hood ODC Reclamation Facility is located at the DPW CU, Bldg 1348, North Avenue and 37th Street.

(2) All turn-in, issue, recovery and recycling activities of ODC will be conducted in accordance with procedures as follows.

b. Personnel:

(1) The ODC Reclamation Facility is staffed with persons holding EPA-approved certification in accordance with 40 CFR Part 82.161.

(2) Certification cards of staff will be on hand at all times while operating equipment.

(3) Certification cards of customers will be required for issue and turn-in of ODC.

c. Security:

(1) Only certified CU staff will be allowed access to the ODC Reclamation Facility.

(2) Only certified CU staff will be allowed to operate ODC Reclamation Equipment.

(3) Key control will be managed by CU Manager.

d. Turn-in Procedures:

(1) Turn-in of ODC recovery cylinders will be accomplished as follows:

(a) Customer will transport ODC containers in a military, government, or contractor-furnished vehicle. Privately owned vehicles (POVs) are unauthorized.

(b) Customer will fill out DA Form 3161 (Request for Issue or Turn-in) indicating type of refrigerant and quantities.

(c) Cylinders will be tagged with refrigerant content.

(2) Customers desiring one-for-one exchange will possess EPA certification cards. Cards will be copied by CU for ODC Management Documentation.

(3) Customers turning in recovery cylinders that have been mixed and that must be disposed of as waste may be charged disposal costs.

(4) All refrigerant removed from Fort Hood equipment will be recovered and turned in to the ODC Recycling Facility.

(5) Customers turning in recovery cylinders that are out of specification and desiring one-for-one exchange will be charged cylinder retest/reconditioning costs.

(6) Turn-in of disposable ODC cylinders will be accomplished as follows:

(a) Customer will transport ODC containers in a military, government, or contractor-furnished vehicle. POVs are unauthorized.

(b) Customer will complete DA Form 3161 (Request for Issue or Turn-in) indicating type of refrigerant and quantities.

(c) Cylinders will be tagged with refrigerant content.

e. Issue Procedures:

(1) Recycled refrigerant will be issued when available prior to issuance of virgin material.

(2) No ODC refrigerants will be purchased locally then brought on to the installation without prior written approval of the Hazardous Material Management Program Manager, 287-9718, Bldg 4219.

(3) Virgin refrigerant will be purchased by DPW CU through the DPW HazMart.

(a) Issue of recycled refrigerant will be accomplished as follows:

(1) Customers will pick up ODC containers in a military, government, or contractor-furnished vehicle. POVs are unauthorized.

(2) All customers requesting issue of ODC will possess EPA certification cards. Cards will be copied by CU for ODC Management Documentation.

(3) DPW and contractor customers will provide a Work Order Document to charge for issue of refrigerant.

(4) Military customers will provide a work request and DA Form 3161 complete with DODDAC, APC, and S-4 and Comptroller signatures.

(5) Recycled ODC will be issued at no cost to customers.

(6) CU will finalize DA Form 3161 (Request for Issue or Turn-in) indicating type of refrigerant and quantities.

(b) Issue of virgin refrigerant will be accomplished as above with the following exceptions:

(1) All issues of ODC refrigerants will be accomplished at the Fort Hood ODC Recycling Facility.

(2) Disposal cylinders will be serial-numbered for accountability.

f. ODC Recycling Facility Operations:

(1) Recycling equipment will be operated only by certified CU staff member.

(2) Specific operating procedures will be found in manufacturers' manuals and in work instructions found in Continuity Book for each piece of equipment.

(3) Specific procedures for processing incoming recovery cylinders will be found in work instructions found in Continuity Book.

(a) Empty disposable cylinders will be prepared by certified CU refrigeration personnel as follows:

(1) Disposable cylinders will be pumped down to insure no presence of refrigerant.

(2) Disposable cylinder valves will be opened to reach atmospheric pressure.

(3) Disposable cylinder valves will be removed, or a hole will be drilled in cylinder wall.

(4) Disposable cylinders will be crushed and diverted to metal recycling.

(b) ODC Reclamation operator will weigh cylinders and track turn-in amounts in ODC Management Database.

(c) Cylinders will be serial-numbered and issues will be tracked in ODC Management Database.

g. Recovery Cylinder Standards:

(1) Recovery cylinders will meet standards in accordance with 40 CFR Part 82 Subpart B, Appendix A.

(2) Recovery cylinders will be marked with retest date which shall be 5 years after the date of manufacture.

(3) Unserviceable cylinders will be sent for repair/retest by DPW CU personnel and charged to the customer.

(4) Recovery cylinders will be clearly marked with contents (i.e., type refrigerant) and whether usable (clean) or unusable (dirty).

h. Storage of Cylinders:

(1) Recovery cylinders will be stored in accordance with product type.

(2) Recycled product will be stored separately from virgin material.

(3) Cylinders will be stored on shelving off the ground to prevent corrosion.

(4) Cylinders will be secured to prevent accidental falls.

i. Quality Assurance Plan:

(1) Testing

(a) Recycled ODC will be periodically tested.

(b) Documentation will be maintained.

(2) Calibration and Maintenance of Equipment

(a) Calibration of Recycling Equipment will be conducted in accordance with manufacturer's specifications.

(b) Documentation will be maintained.

(c) Filter changes and Maintenance of equipment will be documented.

j. Reporting:

(1) ODC Program manager will report quantity of material sent for reclamation, the mass of refrigerant reclaimed, and the mass of waste products disposed of to EPA annually within 30 days of the end of each calendar year (IAW CFR §82.166(h)).

(2) All information should be submitted to:

§608 Recycling Program Manager
(Reclaimer Certification)
Mail Code 6205J
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

5. Point of contact for this memorandum of instruction is Robert Kennedy, DPW, Environmental Division, 287-8714, email: Robert.Kennedy@us.army.mil

6. EXPIRATION. This MOI will remain in effect until superseded or rescinded.

RODERICK A. CHISHOLM
Director of Public Works

DISTRIBUTION:

IAW FH Form 1853: A
1 Ea III Corps MSC

APPENDIX J

MVAC RECOVERY/RECYCLE OR RECOVERY EQUIPMENT CERTIFICATION FORM

Complete once for each shop that services MVACs

MVAC RECOVER/RECYCLE OR RECOVER EQUIPMENT CERTIFICATION FORM

1 _____

Name of Establishment

_____

Street

_____

City, State, Zip Code

_____

(Area Code) Telephone Number

2 _____

Name of Equipment Manufacturer and Model Number

_____

Serial Number(s) Year

3 I certify that I have approved recover/recycle or recover equipment under Section 609 of the Clean Air Act. I certify that the only properly trained and certified technicians operate the equipment and that the information given above is true and correct.

_____ _____

Signature of Owner/Operator Date

_____

Name (Please Print) Title

4

Small Entity Certification.

I certify that fewer than 100 jobs involving refrigerant were performed at the establishment named in Part 1 of this form during 1990. I will purchase approved equipment and certify this to EPA by January 1, 1993.

_____ _____

Signature Date

_____ _____

Name (Please Print) Date

Send this form to:
U.S. Environmental Protection Agency
Stratospheric Protection Implementation Branch
Mail Code: 6205-J
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

Attention: MVACs Recycling Program Manager

MVAC RECOVER/RECYCLE OR RECOVER EQUIPMENT CERTIFICATION FORM INSTRUCTIONS

Motor vehicle recover/recycle or recover equipment must be acquired by January 1, 1992 and certified to EPA on or before January 1, 1993 under Section 609 of the Clean Air Act. To certify your equipment, please complete the above form according to the following instructions and mail to EPA at the following address: MVACs Recycling Program Manager, Stratospheric Ozone Protection Branch, (6202-J), U.S. EPA, 1200 Pennsylvania Ave., N.W. Washington, D.C. 20460.

1 *Please provide the name, address, and telephone number of the establishment where the recover/recycle or recover equipment is located.*

2 *Please provide the name brand, model number, year, and serial number(s) of the recover/recycle or recover equipment acquired for use at the above establishment.*

3 *The certification statement must be signed by the person who has acquired the recover/recycle or recover equipment (the person may be the owner of the establishment or another responsible officer). The person who signs is certifying that they have acquired the equipment, that each individual authorized to use the equipment is properly trained and certified, and that the information provided is true and correct.*

4 Small Entity Certification. *Service establishments that serviced fewer than 100 jobs involving refrigerant during 1990 are not required to purchase equipment until January 1, 1993. To qualify for this one year extension, the owner must fill out Part 1, sign the statement in Part 4 above, and send this form to EPA. Upon inspection, the owner must be able to prove it serviced fewer than 100 jobs in 1990. Small entities must buy approved equipment and certify to EPA by January 1, 1993.*

Appendix B to Subpart B–Standard for Recover Equipment [Reserved]

[FR Doc.92-15861 Filed 7-13-92; 8:45am]